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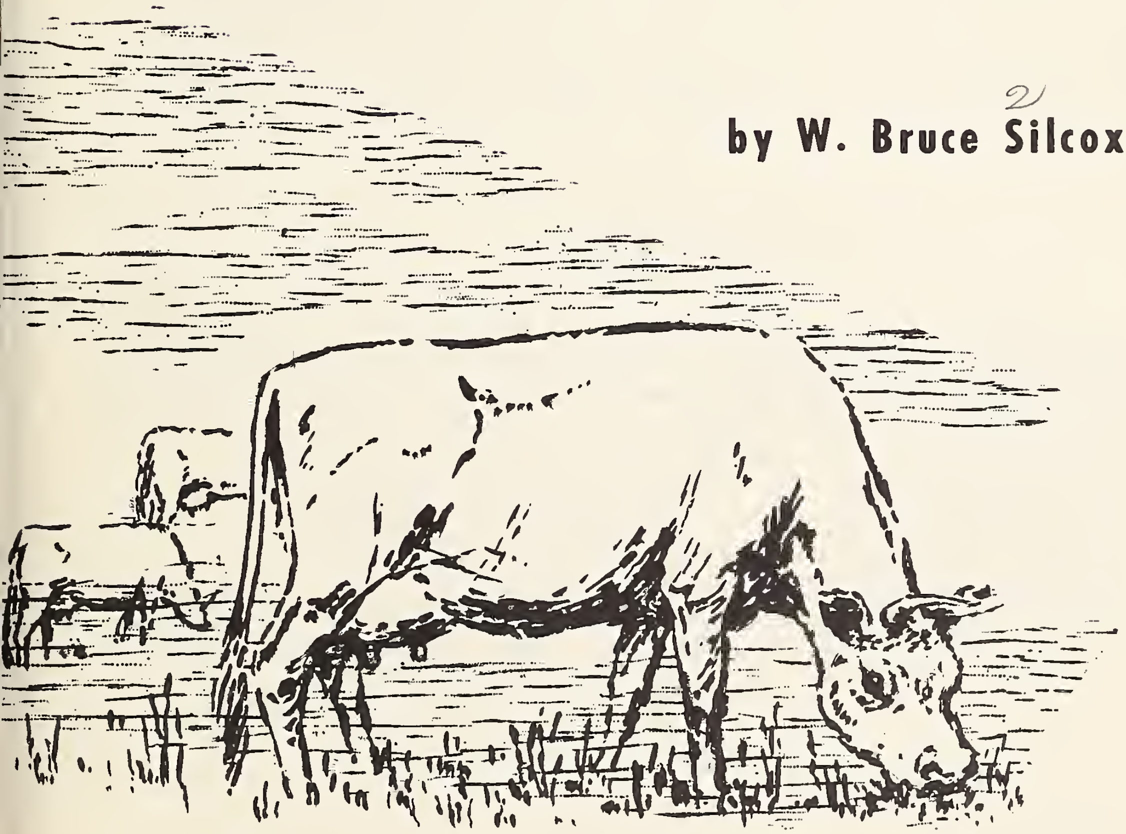
3 NEW ZEALAND'S DAIRY INDUSTRY,

competitive aspects//

by W. Bruce Silcox,2



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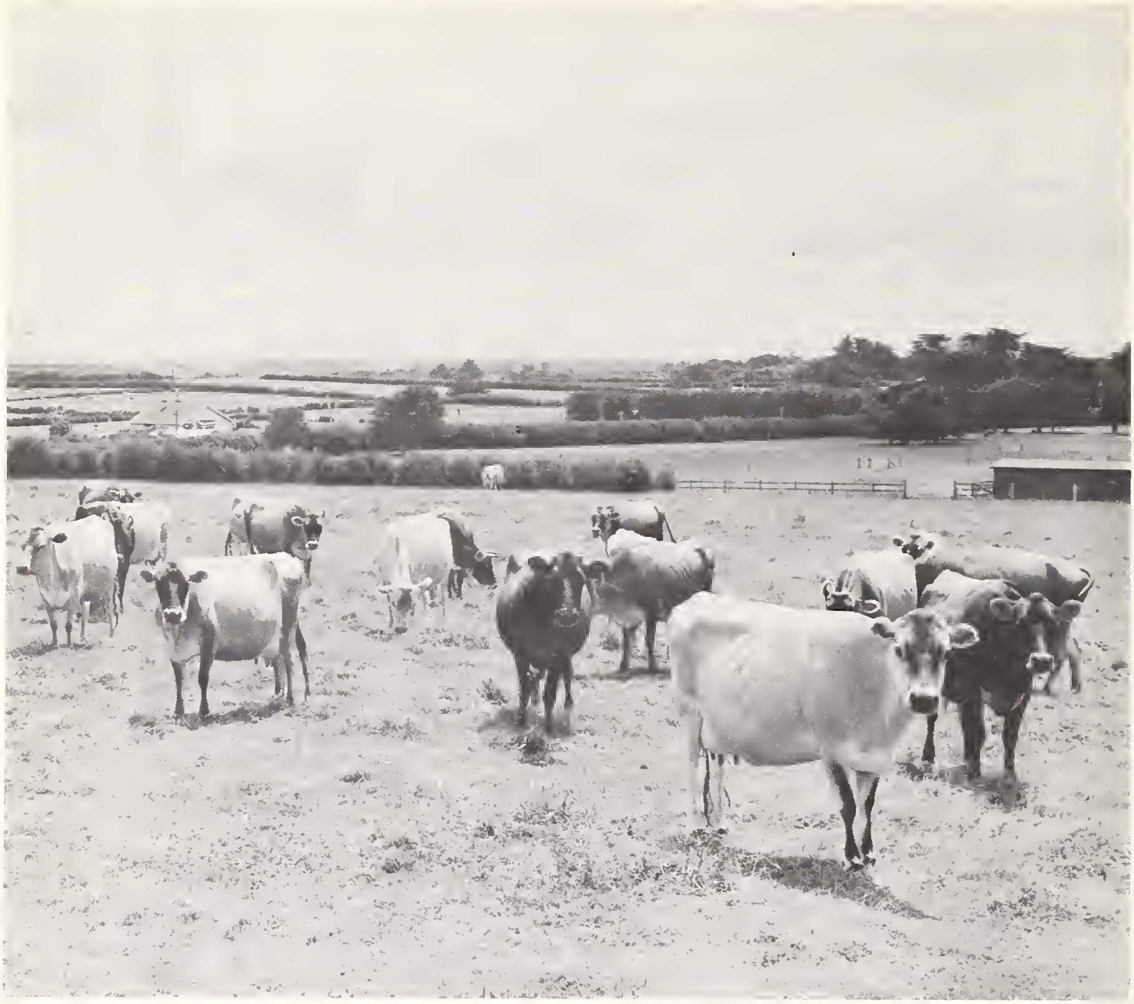

This typical dairy scene shows how natural advantages keep the New Zealand dairy industry's costs among the lowest in the world, and help New Zealand offer stiff competition to other dairy countries. The mild climate, together with the relatively high and well-distributed rainfall, means that good pastures like this one grow almost the year round. It means, too, that cattle generally need no housing; hedges and shelter belts like these give them protection during the winter. The picture also shows the type of comfortable living quarters used by families of hired farm workers.

NEW ZEALAND'S DAIRY INDUSTRY: COMPETITIVE ASPECTS

By W. Bruce Silcox
Dairy and Poultry Division

Summary: The Competitive Position

Costs of Production

New Zealand's dairy production is carried on at probably the lowest cost level in the world. Contributing factors are the temperate climate, which permits an almost continuous growth of pasture throughout the year and eliminates the need for buildings to house livestock and the high degree of mechanization on farms and in factories.

Production Potential

New Zealand's dairy industry has not yet realized its full capacity. Significant in this connection is an estimate that 478 million pounds of butterfat will be available for export in 1972, 24 percent more than in 1952.

Centralization in Marketing

In New Zealand, the sale of all dairy products for export is handled through one agency, the Dairy Products Marketing Commission. The Commission handles all sales of butter and cheese in the United Kingdom and Europe through two overseas marketing companies in which the share capital is held by it and on its behalf. It is this agency also that currently determines the "guaranteed price" to producers. Though, in the final analysis, prices for New Zealand dairy products shipped to the United Kingdom are determined on the London market, where supplies from several countries are sold, the prices quoted to New Zealand producers are not subject to competition in the usual sense of the term.

Equalization of Returns

New Zealand's marketing organization enables it to sell its dairy products any place in the world, equalizing lower prices in certain markets with higher prices in other markets. From a competitive standpoint, this is a distinct advantage.

Industry Reserves

The balance or reserve of approximately $79.4 million in the Dairy Industry Account as of July 31, 1956, offers real possibilities in the field of competition. Probably nowhere else have dairy farmers a reserve account of that magnitude.

Additional Funds

Other funds that could be used for purposes of price support might be available, if necessary, from the government. In the agreement on guaranteed-price procedure between the New Zealand Dairy Board and the government in 1952, section 1, paragraph (c) reads as follows: "The government has stated categorically that in such circumstances" (periods during which overseas price recessions lead to deficits in the Dairy Industry Account) "the existing statutory obligations as to the guarantee of prices will be honored. The parties of this agreement understand this as a statement that the existing provisions of the act will be applied so that the dairy farmer will at least receive a price sufficient to meet costs and to maintain himself and his family in a reasonable state of comfort, and that the necessary monies will be made available by the Government." 1/

The dairy industry has for many years received an indirect subsidy through payments made by the government on the transport of lime and fertilizer to encourage their wider use by farmers. Since dairy farmers account for a large share of the country's farm population, this type of assistance suggests the government's strong interest in supporting the dairy industry in every way possible.

The ready convertibility of English pounds to New Zealand pounds, though not a subsidy in the strict sense of the word, certainly gives New Zealand a competitive advantage. Another advantage comes from the fact that New Zealand dairy products are admitted into the United Kingdom duty free, whereas United States dairy products are subject to import duties of about 1.8 cents per pound for butter, 3.8 cents per pound for cheese, and 0.7 cents per pound for nonfat dry milk.

Overall Problem

In terms of milk equivalent, New Zealand is still the world's largest exporter of dairy products. It will undoubtedly continue to offer stiff competition to other dairy countries, for leaders in government and the dairy industry in New Zealand disclose a keen insight into current problems in the foreign marketing of large supplies of dairy products. New Zealand depends on the United Kingdom and other countries for markets for its dairy products; thus it is concerned over the effect that increased production in other leading dairy countries will have in markets it considers traditionally its own. However, these leaders express an earnest desire to work fairly and harmoniously with other exporting countries in the bid for dairy markets.

Economic Importance and Status of the Industry

Dairying in New Zealand is second only to sheep farming in economic importance. During the marketing year 1955-56, the value of dairy produce exported and sold in that country was $300 million. The combined value of wool, lamb, and mutton during the same period was about $328 million dollars.

The dairy industry of New Zealand is located for the most part in the North Island, particularly in the Waikato, Northland, Taranaki, and Bay of Plenty districts. In these areas, the annual rainfall

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1/ Underscoring supplied.

is well distributed and relatively high--40 inches or more. The land is reasonably level and from average to good quality. Pastures grow almost continuously throughout the year, and, once established, are more or less permanent, apparently requiring only occasional harrowing and the application of fertilizers. The land lacks phosphorus and responds readily to application of superphosphate.

The North Island accounts for the bulk of the Dominion's dairy production--about 93 percent of total butter manufacture and 86 percent of cheese manufacture. Approximately 63 percent of creamery butter manufacture takes place in the Northland and Waikato districts. The Bay of Plenty and Wellington each account for a further 10 percent of total manufactures. Taranaki is the main cheese-producing area, accounting for about 52 percent of the Dominion total. South Auckland and Wellington each account for a further 14 percent.

The number of cows as of January 31, 1956, was 2.00 million, compared with 1.89 million in 1950, 1.79 million in 1940, and 1.80 million in 1936. The average yield of butterfat per cow has increased, however, from 240 pounds per cow in 1936 to 265 in 1956.

New Zealand was the fourth largest consumer of fluid milk among 15 nations in 1955, with 466 pounds per capita; the leading butter consumer, with 44.9 pounds per capita; and fifteenth among 17 nations as a cheese consumer, with 6.1 pounds per capita.

The dairy industry in New Zealand has several outstanding features. The first is its almost complete dependence on pastures for cattle fodder. Another is the fact that, in general, cattle are not housed in winter, owing to the mildness of the climate. Instead, in many dairy herds, each animal wears a lined covering of jute or canvas during the winter months, and hedges and shelter belts afford further protection from the wind. A third is the high extent to which the industry is mechanized, both on farms and in factories. On the farms, about 94 percent of the cows are milked by machine. In the factories, modern machinery and equipment are used. A fourth is the high degree of government activity in marketing dairy products. This appears to be one of several factors that have restricted the development of the cooperative movement among dairy farmers in New Zealand. Although the term cooperative appears in the name of many dairy factories and the organizations embrace other cooperative features, voting at annual and other meetings is conducted on the basis of number of shares held, in contrast with the principle of one-man-one-vote as in the United States.

Milk and Butterfat Production

From the standpoint of dairy production, the past 50 to 60 years are marked by four distinct periods. The first, from 1900 to 1920, was one of gradual but steady increases. The second, from 1920 to 1937, witnessed a marked increase, despite falling prices for dairy produce; output was assisted by land settlement schemes, motor transport, rural electrification, the development of herd testing, and the use of artificial fertilizers. Between 1920 and 1930, the dairy cow population increased by 77 percent--from 783,000 to 1,390,000.

TABLE 1.--Milk, whole: Production and utilization, year ending June 30, average 1934-38, annual 1939-56

Year	Total production	Average butterfat content	Fed to calves and lost	Used in farm butter	Consumed as milk and cream	Manufactured: Creamery butter	Manufactured: Cheese	Manufactured: Condensed milk and whole milk products	Manufactured: Total factory manufacture	Manufactured: Percent of total production
	Million gallons	Percent	Million gallons	Million gallons	Million gallons	Million gallons	Million gallons	Million gallons	Million gallons	Percent
Average:										
1934-38------	988.0	4.30	22.3	12.5	64.6	691.9	191.2	5.5	888.6	91.2
Annual:										
1939---------	891.9	4.36	22.9	10.6	77.0	604.3	171.6	5.5	781.4	88.8
1940---------	951.2	4.40	23.6	10.5	77.7	638.2	195.1	6.1	839.4	89.4
1941---------	1,018.9	4.44	25.7	10.1	77.0	657.2	242.4	6.5	906.1	89.9
1942---------	954.5	4.45	24.6	10.1	77.3	524.5	308.8	9.2	842.5	89.3
1943---------	893.4	4.42	22.6	10.2	79.6	567.1	203.8	10.1	781.0	88.6
1944---------	859.8	4.37	23.2	13.6	77.8	550.7	184.0	10.5	745.2	88.3
1945---------	940.7	4.46	26.2	13.3	74.5	613.1	202.9	10.7	826.7	89.3
1946---------	817.1	4.43	24.5	14.3	77.2	503.4	186.1	11.6	701.1	87.5
1947---------	885.6	4.47	25.5	14.1	78.7	575.9	179.3	12.1	767.3	88.3
1948---------	908.2	4.47	25.8	14.2	80.9	602.7	171.7	12.9	787.3	88.3
1949---------	983.4	4.51	26.6	14.0	83.4	649.0	194.6	15.8	859.4	88.7
1950---------	1,009.8	4.53	26.7	12.2	90.5	658.3	205.5	16.6	880.4	88.3
1951---------	1,068.2	4.52	27.5	10.5	92.1	710.7	211.9	15.5	938.1	88.6
1952---------	1,078.4	4.55	27.0	8.7	93.5	746.7	185.0	17.5	949.2	88.8
1953---------	1,139.9	4.59	29.4	7.7	94.3	774.5	208.5	25.4	1,008.4	89.1
1954---------	1,058.7	4.59	30.8	6.9	95.7	709.1	199.8	16.4	925.3	88.0
1955---------	1,084.8	4.56	29.5	6.6	96.8	739.4	198.1	14.5	952.0	88.4
1956---------	1,119.6	4.62	27.9	5.7	98.2	788.1	185.1	14.5	987.8	88.7

Annual Report, New Zealand Dairy Board, Wellington, New Zealand, 1956.

By 1935, cow numbers had increased a further 30 percent--to 1,807,000. Average production of butterfat per cow was 174 pounds in 1920 and 226 pounds in 1930, and had increased to about 250 pounds when the Second World War commenced.

In the third period, between 1938 and 1946, the number of dairy cows in the Dominion decreased, and production of milk per cow fluctuated downward. Wartime difficulties and shortages no doubt contributed to this decline.

In the fourth period, since the end of World War II, production has increased at a rate comparable with the second period (1920-38). Land settlement and private land development schemes have brought more land into production. Dairy cow numbers have increased by 20 percent; and with particularly favorable weather conditions in successive seasons from 1948-49 to 1952-53, production per cow climbed beyond the highest prewar levels.

For many years, condensed and powdered milk products formed a relatively small and unimportant part of the pattern of the production of dairy products in New Zealand. However, the uses now being found for these products and their suitability for storage and transportation over long distances, combined with the development of improved methods of reconstitution, have brought these products into greater prominence. During the past 5 years, there has been greater emphasis on flexibility in operation and diversification in the manufacture of dairy products.

The emphasis at present is being intensified to meet changing market conditions for the traditional products as well as for the individual powdered varieties. Over the last few years, several companies have installed facilities for manufacturing these various products, and, at the same time, plants have been erected to carry on large-scale manufacture. During the past year, there has been an improvement in export prices for some of these products, notably milk powders and casein, and production has increased. There is no evidence that the upward trend in the production of milk powders has ceased. Over the last 3 years, New Zealand has experienced a considerable loss in markets for evaporated milk. Skim milk powder, however, has sprung into prominence during this period, and the capacity for production has expanded greatly. Production of casein too has increased steadily over recent years in response to higher returns. During the last 2 or 3 years a number of cheese factories have switched to casein manufacture. Production of casein has increased from 21.5 million pounds during the year ending June 30, 1952, to 32.7 million pounds during the year ending on the same date, 1956. Most of the casein manufactured is sold through overseas markets.

Government Assistance

Marketing

For all practical purposes, government assistance to dairy farmers in New Zealand has its origin in the Dairy Export Control Act of 1924. As far back as the turn of the century, industry conferences were expressing the view that there should be some way of minimizing gluts and shortages and improving average returns. But the government took little direct action until 1924, when it established the Dairy Produce Control Board.

In 1926, the Board assumed absolute control of export marketing, including the fixing of prices. Price-fixing apparently met with strong opposition in the United Kingdom, and, after operating on this basis for only 13 months, the Board abandoned this feature of its activities.

From 1927 to 1934, the Board exercised limited control over exports. Its function consisted mainly of regulating shipping, supervising storage and transport, advertising through its London agency, and maintaining contact between exporters and importers.

In 1934, after 4 or 5 years of generally depressed prices, the Board took over specific allocation of factory outputs to about 30 importers acting as consigning and selling agents in the United Kingdom. It was hoped that this would introduce a greater degree of orderly marketing and maximize the returns for the products to be shipped. In 1939, the decision of the government to purchase the total exportable output of butter and cheese transferred all responsibility for marketing from the industry to the government. The Primary Products Marketing Act, passed that year, empowered the government to fix prices and purchase dairy products and to market them in New Zealand and overseas. The Dominion Marketing Department, under the New Zealand Government, took over the bulk purchasing and shipment of various New Zealand food and dairy products. The United Kingdom became the sole purchaser of dairy products exports.

Bulk-purchase agreements were continued through 1943 and 1944, and long-term contracts were entered into to insure the largest possible supplies of dairy products to Britain, not only during the war but through 1948. Later these long-term contracts were extended through 1950--and finally through 1954.

Organizations now responsible for the marketing of New Zealand dairy products are the New Zealand Dairy Board, a producer organization, and the New Zealand Dairy Products Marketing Commission, established by the Dairy Products Marketing Commission Act of 1947.

The New Zealand Dairy Board acts as the administrative head of the dairy industry. The Commission cannot itself lay down policy and must conform to the policy set by the Dairy Board. The Board, in turn is responsible to the industry and in matters of major policy consults the industry before it acts.

In addition to selecting three persons to be appointed to the Commission by the Minister of Marketing, the Dairy Board also advises the minister on the appointment of the Commission's chairman. The Board collects general statistical information of interest and value to the dairy industry. It shares with the government the management and finance of the Dairy Research Institute. The Board is represented on the Meat Producers Board, the National Pig Council, the Dairy Factory Managers Registration Board, and numerous committees working in the interest of the dairy industry. It also conducts an extensive artificial breeding and herd improvement program.

The Board is responsible for administering the regulations governing zoning of supplies of milk and cream to manufacturing dairies to meet the demand for the various products in existing markets. Also, the consent of the Board is necessary before any licenses can be given by the Director of the Dairy Division of the Department of Agriculture for extensions or new buildings for dairy manufacturing factories.

The Board has the further responsibility of providing containers for all butter, cheese, and milk powder (other than that packed in tins) intended for export.

Under the Dairy Products Marketing Commission Act of 1947, the Commission, comprised of 7 members, has had the following functions:

(1) To acquire and market butter and cheese manufactured in New Zealand and intended for export;
(2) To determine the prices and make payments therefor;
(3) To report to the Minister of Agriculture from time to time concerning (a) trends and prospects in overseas markets in respect of dairy products and (b) movements in costs or prices, or other factors likely to prejudice the economic stability of the dairy industry.

In December 1948, the Dairy Products Marketing Commission Amendment Act of that year was passed extending the powers indicated above to cover dairy produce other than butter and cheese.

In 1956, the Commission consisted of the following members appointed by the Governor General on recommendation of the Minister of Marketing:

(a) One person appointed as chairman;
(b) Three persons whose names are selected by the Minister from a panel of names submitted by the Dairy Board;
(c) Three other persons.

Under the Dairy Products Marketing Commission Amendment Act of 1956, passed by the Parliament on October 1 of that year and effective August 1, 1957, certain changes have been made in the Commission as follows:

(a) Three persons shall be appointed as representatives of the Government of New Zealand;
(b) Two persons shall be members of the Dairy Board; and
(c) Two persons not members of the Dairy Board shall be nominated at the annual conference of the Dairy Board.

This amendment appears to place with the Dairy Board, the producer organization, the responsibility of selecting 4 members to the Commission, instead of 3 as previously provided.

A further amendment provides that the Commission shall elect a chairman from among its members, at a meeting to be held in August each year. Prior to this, the chairman was appointed by the Governor General on recommendation of the Ministry of Marketing. This change in the structure and functions of the Commission appears to have been the result of efforts for several years to shift responsibility from the Commission to the Dairy Board.

In 1952, producers became dissatisfied at not receiving more nearly the full proceeds from export sales less administrative expenses. Insistence on having this point of view reflected in the guaranteed price, established by the Commission, resulted in what is commonly referred to as the 1952 agreement on guaranteed price procedure, between the New Zealand Government and the New Zealand Dairy Board, in consultation with the Commission.

The groups agreed that the purpose of the guaranteed price scheme was to stabilize the income of the dairy farmer and give him some certainty as to probable income in any production season. They also agreed that the provisions of the Act of 1947 would be applied so as to give the dairy farmer a price at least sufficient to meet costs and maintain himself and his family in a reasonable state of comfort. The agreement further set forth that if the movement of costs, as measured by the Dairy Products Marketing Commission according to present standards, should justify a price in excess of realizations, the Commission would determine and pay that price. The agreement was adopted by the 1952 Dominion Dairy Conference (the annual meeting of the industry) and approved by the Government. But this did not stem the demands of producers that prices more fully reflect costs of production, and in 1955 a Committee of Inquiry was appointed to review the problem and return to the New Zealand Dairy Conference with recommendations.

One of the most controversial recommendations made by the special committee was that the Dairy Commission be abolished and its function be absorbed by the Board. After several months of discussion, the Dominion Conference Dairy Section of the Federated Farmers in June 1956 rejected the recommendations of the Committee and called for retention of the Dairy Commission. In August 1956, the Dominion Dairy Conference also voted to retain the Commission, with greater producer representation, and also agreed to the establishment of a price-fixing authority other than the Commission. The recommendations of the conference were approved by the New Zealand Parliament substantially as submitted in October 1956, to become effective August 1, 1957.

The new price-fixing group, known as the Dairy Products Prices Authority, is appointed by the Governor General on the recommendation of the Minister, and consists of one person to be appointed as chairman; one person to be appointed as a representative of the Government of New Zealand; and seven other persons. Before recommending that any person be appointed as chairman of the Authority, the Minister must obtain the approval of the Dairy Board.

The principal functions of the authority are (a) to determine, in accordance with the Act, the prices which the Commission is to pay for the butter and cheese it acquires, and (b) to authorize payments of surplus amounts received through the sale of butter and cheese.

Establishment of Prices

Under the Act of 1947, the Dairy Products Marketing Commission has been required to fix prices for each marketing season either before or as soon after the commencement of the season as possible.

The Commission was empowered to fix prices for different kinds of butter and cheese (and for nonfat dry milk after amendment to the Act in 1948, or for different grades or quotations of the same kind of products). If, after prices had been fixed for any marketing season, the Commission found that costs of production had increased so as to warrant an increase in the prices, it was empowered to fix new prices. Any such increase in prices to be paid by the Commission could be made retroactive to the date from which the costs of production had increased.

Prices fixed have been published as required, and the following additional considerations were to be taken into account:

(a) The necessity, in the public interest, of maintaining the stability and efficiency of the dairy industry;
(b) The costs involved in the efficient production of butter, cheese, or dry milk;
(c) The general standard of living of persons engaged in the dairy industry in comparison with the general standard of living throughout New Zealand;
(e) The estimated cost to the Commission of marketing the butter, cheese, or dried milk concerned, and also the cost of general administration of the act;
(f) Any other matters deemed to be relevant.

Accordingly, it appears that prices on butter and cheese from 1947 through the marketing year ending July 31, 1957, were not calculated by the use of mathematical formulas but were arrived at on the basis of such information as the Commission had before it, plus its best experience and judgment as to market prospects in the coming marketing year. Following is the schedule of prices of butter and cheese by grade for the 1956-57 season:

Score	1955-56	1956-57
	U. S. cents per pound	U. S. cents per pound
Creamery butter:		
Finest grade:		
94 and over	38.5	39.8
93 to 93-1/2 1/	38.4	39.5
First grade:		
92 to 92-1/2	38.3	39.5
90 to 91-1/2	38.1	39.2
Second grade	37.5	38.7
Third grade	--	32.6
Cheese:		
Finest grade:		
94 and over	21.5	22.7
93 to 93-1/2	21.4	22.6
First grade:		
92 to 92-1/2 1/	21.2	22.3
91 to 91-1/2	21.1	22.2
Graded, 88 to 90-1/2	19.9	21.1
Second grade, 87 and under	16.9	18.0
Whey butter:		
First grade	36.1	37.2
Second grade	35.5	36.6

1/ Basic price.

At the time the prices for the 1956-57 season were announced, the chairman of the Commission estimated that they would enable efficient dairy companies to pay to suppliers 43.5 cents per pound for butterfat for butter manufacture and 47.0 cents per pound for butterfat for cheese manufacture for the season.

The foregoing prices were designed to take care of movements in farm and factory costs since the prices were fixed previously. They represented an increase in the price of butterfat by approximately 1.15 cents per pound over the announced prices for 1955-56.

In July 1956, in a joint statement, the New Zealand Dairy Board and the New Zealand Dairy Products Marketing Commission Chairman announced that the price differential to cheese factory suppliers for the entire 1955-56 season was to be increased from 3.5 cents per pound to 4.6 cents per pound. For the marketing season beginning on August 1, 1956, however, the cheese differential was once more set at 3.5 cents, with an agreement between the Board and the Commission that at the end of the season the matter would be jointly reviewed again, as it was at the end of the 1955-56 marketing year.

Dairy Industry Stabilization Account

A very important part of the operations of the Dairy Products Marketing Commission has been the Dairy Industry Stabilization Account held in the Reserve Bank of New Zealand. This, in effect, is the same account established under the Marketing Act of 1936. In brief, this account has been built up from the difference in payments received from the sale of dairy products exported and payments made to producers under the prices fixed by the Commission at or near the beginning of the marketing season.

The balances in the Dairy Industry Stabilization Account as of July 31 each year since 1936-37 are shown below:

	U. S. dollars		U. S. dollars
1938	2,260,758	1948	44,322,205
1939	6,880,485	1949	42,467,111
1940	5,739,954	1950	51,105,245
1941	5,567,916	1951	63,813,014
1942	3,070,370	1952	67,776,342
1943	699,529	1953	70,968,165
1944	13,203,305	1954	69,854,447
1945	15,636,624	1955	67,703,227
1946	15,814,267	1956	79,440,215
1947	21,997,469		

Source: Annual Report, New Zealand Dairy Products Marketing Commission, 1956, and supplementary data from U. S. Embassy, Wellington.

The 1956 balance of $79.4 million 2/ is equivalent to 37 percent of the value of overseas disposals of dairy produce during the

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2/ Currently, 1 New Zealand pound equals $2.78.

1955-56 marketing season, according to the 1956 Annual Report of the New Zealand Dairy Board.

Subsidies

The entire economy of New Zealand is geared to meet the needs of the producer of primary products for export. This, no doubt, arises from the fact that the country's economy is predominantly agricultural. In fact, more than 88 percent of the foreign exchange comes from the sale of meat, wool, and dairy products. 3/ During the year ending June 30, 1956, receipts from exports of dairy products accounted for $226.9 million, or 29.1 percent of the total receipts from exports from New Zealand that year. Because of the major importance of dairying and the production of meat and wool to New Zealand, the country's shipping, internal transport, storage, fertilizer requirements, marketing, and research have been designed and developed to augment the efforts of the producer.

In order to provide these services, subsidies and grants have been paid from public funds for many years. It is these subsidies that have made it possible for the dairy industry to develop.

TABLE 2.--Subsidy payments: Use and extent, year ending March 31, 1954-56

Use	1954	1955	1956
	1,000 U.S. dollars	1,000 U.S. dollars	1,000 U.S. dollars
Primary production	1,376	1,543	1,338
Essential clothing and foodstuffs:			
Clothing	11	--	--
Dairy produce	24,153	21,826	21,672
Other	92	375	55
Wheat	13,900	10,764	8,291
Miscellaneous (primarily gas)	642	1,159	1,280
Total subsidies	40,174	35,667	32,636
Less recoveries from farm industry stabilization accounts 1/	1,015	1,010	1,515
Net subsidies	39,159	34,657	31,121

1/ Year ending July 31.

3/ Bulletin, Reserve Bank of New Zealand, September 1956.

One of the most effective methods used by the government in making New Zealand produce competitive on world markets has been the operation of its policy of price stabilization, which keeps the cost of living and wages down. The consumer subsidies on dairy produce are the largest of any paid, accounting for 62 percent of net subsidy payments in 1954 and 60.9 percent in 1956. Subsidy payments on wheat ranked second. Dairy products and wheat subsidies combined accounted for nearly all subsidy payments in the year ending March 31, 1956. For dairy commodities, the consumer subsidy paid by the Government during July 1956 to make up the difference between the amount paid by consumers domestically and the guaranteed price was about 3.5 cents per quart on milk and about 12.9 cents per pound on butter.

Although the $79.4 million held in reserve in the Dairy Industry Account is available during the months ahead as a dairy price support fund, it has not been considered as a subsidy in the preparation of this publication.

Grading and Quality Control

The grading of dairy produce for export began in 1894. 4/ Authority was contained in the Dairy Industry Act of that year and is at present covered by the Dairy Industry Act of 1908, its amendments, and the Dairy Produce Regulations 1938, Serial number 1938/91. Grading is conducted by the Dairy Division of the New Zealand Department of Agriculture at 10 main points in the Dominion. A charge payable on total manufacture as disclosed in the annual accounts and balance sheets of dairy companies is made for the service. During the marketing year ending July 31, 1956, the charge was .051 cents per pound of butterfat in creamery butter and .049 cents per pound of butterfat in cheese manufactured. 5/ The costs of the cheese and butter grading services have been met by the industry for many years. Similar payments have more recently been made effective regarding milk powder and casein graded. The charges are on a tonnage basis for milk powder and on a per sample basis for casein.

Storage charges are based on schedules arranged between the owners of the "cold stores" and the industry and vary from port to port and according to the length of time the produce is in store. They cover receiving into the cold stores and delivery to shipside and include all work of opening and reclosing the packages graded and check-weighing and stamping them with grading marks. They also include provision for accommodation of the grading staff, office and laboratory requirements, and space required to handle packages for grading and weighing. Equipment is provided by the Department of Agriculture.

The grader in charge supervises all of the work, including temperature and humidity records both during holding and at time of shipments, records of incoming and outgoing produce, stocks in cold

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4/ Primary Production in New Zealand, Department of Agriculture, Wellington, New Zealand, 1952.

5/ Annual Report, New Zealand Dairy Products Marketing Commission, for the period Aug. 1, 1955, to July 31, 1956.

stores, and all matters covered by the Dairy Produce Regulations. He also notes the condition of the produce on arrival at the cold stores and advises the owners of any defect which indicates neglect at any point during transit.

Shipment overseas is supervised by the Dairy Products Marketing Commission, which receives copies of advice notes sent by consignors to graders of any defect which indicates neglect at any point during transit.

It is the practice to stack the dairy produce in storage as far as possible in such a way that any consignment is available for despatch on any vessel nominated by the Dairy Products Marketing Commission to the port which is indicated on the advice note. Grading is performed for export consignments of butter, cheese (including processed cheese), whole milk, skimmed milk or buttermilk powder manufactured by the roller method of drying, and casein. For spray process powders, the "factory agency" system was introduced in September 1954. 6/ Under this procedure, the grading is largely based on factory analyses, grades being allotted and applied to the containers by the factory staff. Check samples are sent to the grading stores for control analysis and the Dairy Produce grader, on finding reasonable agreement with the factory results, issues official grade certificates. Regular visits are made to the factories to check this system, which appears to be working smoothly, and to provide the necessary quality control. At the plants, the laboratory analytical work is kept as close as possible to the powder manufacture.

Under the system of purchase by the Commission at a differential price depending on points awarded as graded, great responsibility rests with the grader and the Dairy Division of the Department of Agriculture to maintain a uniform standard in grading at the various ports. To achieve this as far as possible, a superintendent of grading visits all grading stores throughout the Dominion regularly during the year.

For grading, one box (56 pounds net) of each churning of butter or one crate (two cheeses of approximately 80 pounds each) of cheese from each vat is examined and graded (finest, first, or second grade), and the consignment stamped accordingly. Cheese for export is shown on page 14. The system for grading roller-process milk powder products for export includes analysis of moisture and fat, sediment test, and determination of quality by organoleptic methods. Milk powders are classified as grades 1 or 2. The butter and cheese is not only graded according to points but check-weighed, and extensive analytical laboratory examinations for the principal constituents are made. These products are also examined for bacteriological and metallic contamination, if any. The fat, water, and salt content of butter is limited by regulation. The fat content of New Zealand cheese is so high that the 50-percent minimum of fat in the water-free substance is seldom approached. For both butter and cheese, the fat content is used as a basis for calculating the amount of fat recovered in the manufactured products, and from it

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6/ *Annual Report*, New Zealand Dairy Board, Wellington, 1955.

New Zealand's dairy products are carefully graded before export. Above, butter at the Auckland grading stores, being checkweighed and sampled. Both butter and cheese are analyzed for fat, water, and salt content, and scored on flavor, body and texture, color, and finish. At left, cheese already graded (note official grade stamp on each crate end). These crates, each containing about 165 pounds of cheese, are being held at controlled temperature and humidity until the time of shipment comes.

and the yield, which must be furnished to the grader by the dairy company, is calculated the percentage of the fat received that has been credited. Butter not complying with the regulations with respect to either water or salt content is returned to the factory to be reworked.

In recent years, examinations have been extended to include the analysis of milk powder products, microscopic examinations for classification purposes, and sediment tests of dairy produce.

In addition to the local service, two officers of the Dairy Division of the New Zealand Department of Agriculture have been sent on assignments to London of 5 years or more, and on occasion another officer spends a year there. The officers' duties include regular inspections of all types of dairy produce exported to Great Britain from the Dominion, and investigation of complaints concerning quality and output.

The grade stamp placed on the containers in New Zealand indicates in a cipher the month and day of grading and the grade of the contents. From this, it is possible to note whether the produce has retained its original quality, and detailed reports are forwarded to the dairy company, the instructor, and the grader concerned, while one copy is retained at the head office.

Also, these officers keep in touch with those engaged in the wholesale and retail trade and with developments in the dairy industry. In so doing, they render a real service by forming a link between the producers in New Zealand and the people in the United Kingdom market.

TABLE 3.--Butter: Total graded for export, average grade, and percent in each grade classification, year ending Mar. 31, 1947-56

Year	Total graded	Average grade	Percentage distribution			
			Finest grade		First grade	Under first grade
			Total finest	94 points and over		
	Million pounds	Points	Percent	Percent	Percent	Percent
1947----	266.8	93.37	82.94	41.27	16.86	0.19
1948----	297.4	93.50	86.89	47.64	12.98	.12
1949----	310.2	93.54	88.16	51.89	11.77	.06
1950----	334.3	93.57	88.36	55.39	11.53	.10
1951----	326.2	93.56	89.09	53.17	10.74	.16
1952----	351.6	93.58	88.57	52.69	11.33	.09
1953----	360.8	93.55	87.24	55.65	12.66	.09
1954----	328.8	93.43	83.69	45.57	16.27	.03
1955----	334.9	93.52	84.56	53.38	15.32	.11
1956----	356.3	93.45	84.51	51.33	15.41	.07

New Zealand Department of Agriculture.

About 90 million pounds more butter was graded for export in 1956 than in 1947. Average grade points went up somewhat in the 10 years. The most significant change, however, was the increase in the proportion of top-score butter (94 points and over) from about two-fifths to over half the butter graded.

In maintaining the quality of New Zealand creamery butter at a high standard, particular attention has been given to uniformity in flavor and good keeping quality. These characteristics have been confirmed by storage tests locally and in reports received from the United Kingdom. 7/ Also, special attention has been given during the past season to the prevention of spotted or uneven color. It appears that the return to open markets and competition from other countries has stimulated interest in the finer points of buttermaking and a number of factories are producing a fuller flavored butter. Some managers have regulated manufacturing technique to give a better textured and more spreadable butter. It may be expected that emphasis along this line will continue.

TABLE 4.--Cheese: Total graded for export, average grade, and percent in each grade classification, year ending Mar. 31, 1947-56

Year	Total graded	Average grade	Percentage distribution		
			Finest grade	First grade	Under first grade
	Million pounds	Points	Percent	Percent	Percent
1947	194.0	92.25	33.84	62.66	3.49
1948	191.0	92.18	28.35	67.69	3.95
1949	202.6	92.24	29.59	67.71	2.69
1950	225.0	92.21	27.64	69.20	3.15
1951	228.5	92.02	20.53	74.70	4.76
1952	215.6	92.07	18.99	78.03	2.97
1953	225.0	92.00	17.36	79.14	3.49
1954	226.5	91.95	15.41	80.63	3.95
1955	224.5	91.99	20.46	74.98	4.55
1956	201.4	91.97	17.49	78.60	3.90

New Zealand Department of Agriculture.

For cheese, unlike butter, the average grade showed a slight decline between 1947 and 1956; the proportion graded as finest decreased sharply, while the proportion of first-grade rose from under two-thirds to nearly four-fifths.

The finish of both butter and cheese improved markedly during the 1955-56 marketing year. Cheesemakers responded to a drive for

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7/ Annual Report, New Zealand Department of Agriculture, 1956.

neater and more attractive packages; it appears that in some districts cheese showed improvement and carelessly finished or poorly packed cheese was infrequently seen.

Long-Term Production and Export Potential

New Zealand is capable of great expansion in its primary industries. Considerably greater quantities of dairy and meat products can be produced. It appears likely that in the next 20 to 30 years better farm management, control of disease, and artificial breeding will substantially increase butterfat production. Probable butterfat production at selected 10-year intervals is indicated in the following estimate by the New Zealand Department of Agriculture:

	Million pounds	Percentage increase
1952 (base)	505	--
1962	569	13
1972	657	30
1982	719	42

After deducting average per capita local consumption of butterfat (59.7 pounds in the base year, estimated at 61 pounds thereafter), the Department estimated the quantity available for export as follows:

	Million pounds	Percentage increase
1952 (base)	387	--
1962	420	9
1972	478	24
1982	505	30

Total exports of butter and cheese in 1955-56 were 362.8 million pounds of butter and 197.8 million pounds of cheese. 8/ Assuming that the realtionship in the quantities of butter and cheese to be exported during the next 30 years remains the same as it was in the above period and that the estimated percentages of increase shown above apply to the next three 10-year periods, export availability of these products would be as follows:

	1966	1976	1986
	Mil. lb.	Mil. lb.	Mil. lb.
Butter	395.4	449.9	471.6
Cheese	215.6	245.3	257.1

For the 30-year period indicated, the percentage increase would be 30 percent with respect to both butter and cheese.

8/ Annual Report, New Zealand Dairy Board, Wellington, 1956.

TABLE 5.--Selected dairy products: Production and exports, year ending June 30, average 1934-38, annual 1939-56

Year	Butter		Cheese		Canned and dried whole milk		Dried skim milk		Butter-milk powder production [2]	Casein	
	Production	Exports	Production	Exports	Production	Exports	Production	Exports [1]		Production	Exports
	Million pounds	Million pounds	Million pounds	Million pounds	Million pounds	Million pounds	Million pounds	Million pounds	Million pounds	Million pounds	Million pounds
Average:											
1934-38------	379.0	314.2	211.0	199.5	14.7	10.0	(3/)	11.2	(3/)	7.8	7.3
Annual:											
1939---------	336.6	264.5	191.0	179.6	15.0	8.9	(3/)	13.4	(3/)	4.4	3.1
1940---------	359.0	292.0	218.6	207.2	17.4	10.7	(3/)	13.8	(3/)	2.2	4.7
1941---------	375.4	305.0	274.1	263.9	17.4	10.5	(3/)	17.0	(3/)	1.7	2.0
1942---------	305.0	231.8	353.2	336.2	24.8	16.3	(3/)	14.1	(3/)	.9	.2
1943---------	323.6	243.7	230.2	217.9	25.3	16.5	(3/)	14.1	(3/)	2.2	1.1
1944---------	312.9	247.7	206.3	191.2	28.6	15.8	18.3	11.8	(3/)	2.0	1.3
1945---------	353.6	294.1	232.2	216.1	28.9	17.2	22.1	17.0	0.7	2.7	1.8
1946---------	291.8	237.8	211.6	196.0	32.2	20.6	19.7	17.6	1.1	2.7	1.5
1947---------	334.4	280.4	205.1	187.0	35.6	26.6	27.1	25.7	1.3	6.5	4.9
1948---------	348.5	290.3	193.5	179.6	38.9	24.6	27.3	27.7	2.9	10.0	8.5
1949---------	379.4	323.0	222.6	205.4	46.8	34.9	36.9	36.5	3.8	12.0	10.9
1950---------	385.0	323.2	236.0	219.0	48.1	35.2	45.2	48.1	8.9	11.8	10.7
1951---------	413.0	336.2	243.0	215.2	46.3	24.0	59.8	69.8	16.5	14.7	13.6
1952---------	433.8	348.5	214.3	225.9	50.8	38.5	71.2	80.1	15.9	21.5	20.3
1953---------	455.5	364.2	241.0	206.9	63.3	55.1	86.6	91.3	12.9	15.9	15.2
1954---------	415.5	319.6	231.6	214.6	37.8	31.8	89.1	92.5	13.8	18.6	17.9
1955---------	429.1	333.9	229.0	212.6	37.4	21.9	69.8	77.9	21.7	25.3	24.4
1956---------	458.0	362.8	215.7	197.8	32.9	23.1	79.0	92.7	28.0	32.7	32.0

[1] Includes dried buttermilk.
[2] Exports included in exports of dried skim milk.
[3] Not available.

Annual reports of New Zealand Dairy Board.

In the processed milk group, skimmed milk powder is likely to be the most important. Annual exports of dried skim milk and buttermilk powder, combined, have averaged about 87 million pounds during the past 5 years. The present capacity to produce dried skim milk is more than twice the present output. Exports of dried whole milk and casein during the past 5 years have averaged 14 and 20 million pounds respectively. Responding to higher prices, exports of casein from New Zealand during the year ending June 30, 1956, were about 32 million pounds. Facilities to produce much larger quantities of these products could be greatly expanded should prices warrant. The production of margarine in New Zealand is not significant.

The United Kingdom has always been the main outlet for butter and cheese exports. This was particularly true under the bulk-purchase and long-term contracts which operated from 1939-40 to 1953-54. Throughout the war period, the United Kingdom purchased the entire exportable surplus of both products. From the end of the war until the cancellation of the agreement at the end of the 1953-54 season, the volume of butter and cheese available for sale in other markets was limited under the terms of the annual contracts with the United Kingdom. While the United Kingdom may be expected to absorb most of the exports of butter and cheese from New Zealand, it is now believed that markets in other parts of the world will assume greater importance than in the past.

New Zealand's main competitors on the British market have the advantage of proximity and can thus more easily and quickly cater to the preferences of any section of that market. The substantial increase in the consumption of oleomargarine in the United Kingdom not only tends to set limits on the price that may be charged for butter but represents a real obstacle to expansion in the market for butter. Accordingly, dairy industry leaders are exploring other markets as possible outlets for the contemplated increase in production of dairy products in the Dominion.

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